CITY OF LODI

COUNCIL COMMUNICATION

AGENDA TITLE: Authorize City Manager to Execute Professional Services Agreement for Wastewater Treatment Master Plan

MEETING DATE: November 18, 1998

PREPARED BY: Public Works Director

RECOMMENDED ACTION: That the City Council authorize the City Manager to execute a professional services agreement with West Yost & Associates for the Wastewater Treatment Master Plan, and appropriate funds in accordance with the recommendation below.

BACKGROUND INFORMATION: At its June 17, 1998 meeting, the City Council authorized staff to seek statements of qualifications from consultants for development of a long-range master plan for treatment of wastewater at the City's White Slough Water Pollution Control Facility. The City's State discharge permit has expired and, as part of the renewal process, staff has met with engineers from the Regional Water Quality Board. Based on these discussions and experiences of other wastewater agencies, there is no question that Lodi's wastewater treatment and disposal methods will need to be thoroughly evaluated and changed to reduce impacts to the Delta.

A letter of request for qualifications was mailed to twenty-one firms. We received qualification statements from six firms. Our selection committee, consisting of Janet Keeter, Deputy City Manager; Rad Bartlam, Community Development Director; Fran Forkas, Water/Wastewater Superintendent; Del Kerlin, Assistant Wastewater Treatment Superintendent; Max Burchett, Consultant; and me, reviewed these statements and selected four of the firms for an interview. Interviews were held September 22, 1998, and the firm of West Yost & Associates, of Davis, was selected to develop a scope of work, schedule, and final budget for the Wastewater Treatment Master Plan. Their scope of work is attached. The study will take approximately nine months and their fees will be $240,000.

In addition to the work to be done by West Yost, we intend to utilize the services of our long-time wastewater technical consultant, Max Burchett, to review and work with West Yost. We also intend to encourage significant public participation which means additional costs for public meetings, advertising, printing, and other expenses. We also anticipate there may be a need for additional surveying, mapping, legal and Delta monitoring work. These items, plus contingencies, bring the total project budget to $300,000.

As part of the public participation process, we intend to work closely with, and make presentations to, various Chamber of Commerce committees, service clubs, and other interested businesses and organizations. Most significantly, we intend to assemble a citizens' review committee to work with staff and the consultants throughout the study. This group will include representatives from the Chamber and

APPROVED: _____
H. Dixon Flynn -- City Manager

businesses as well as the general public. We also hope to involve the Regional Board and environmental and farming interests from this area. Finally, the public involvement process will include public meetings and council presentations.

Related to this effort is Lodi's involvement with the Central Valley Wastewater Managers Association. This is a group of agency managers in the Sacramento and San Joaquin valleys who share information on environmental and regulatory concerns. Fran Forkas, who serves as Vice President and Treasurer, and Del Kerlin are both active members. This group is presently involved in developing a "white paper" to jointly work with the Central Valley Regional Water Quality Control Board on a more standardized permitting process/set of conditions. The proposed budget includes $10,000 to support this effort.

Additionally, Lodi is currently participating in funding development of a statewide General Wastewater Discharge Requirements for biosolids. Our current method of biosolids disposal will be an item needing to be addressed during our permit renewal process. This work has already been funded.

FUNDING: Requested Appropriation: Wastewater Utility Enterprise Fund $300,000
(Current Capital Budget, Land Acquisition Project)

Funding Available: Ruby R. Paiste for
Finance Director

Richard C. Prima, Jr.
Public Works Director

RCP/lm

Attachment

cc: Water/Wastewater Superintendent
Assistant Wastewater Treatment Superintendent
West Yost & Associates
Max Burchett

City of Lodi
Wastewater Treatment and Disposal Master Plan
DRAFT SCOPE OF SERVICES

TASK 1. ASSEMBLE INFORMATION

With assistance from City staff, West Yost & Associates (WYA) will assemble available information relevant to the development of the wastewater treatment master plan. This will include previous reports, plans, land ownership maps, soils information, rainfall data, crop evapotranspiration data, historical wastewater plant loading and performance data, regulatory correspondence, and environmental documentation.

We will perform an aerial survey of the land owned by the City plus land to the north and east which may be desirable for expansion. The survey will be at a planning level scale of 1" = 400' with 1' contour intervals (4' accuracy, 1' interpolated).

TASK 2. FLOW AND LOADING PROJECTIONS

Working with the planning department staff, population projections will be developed for the 20-year planning period to allow determination of associated flow and loading that the plant will be expected to treat and discharge or reuse.

Influent concentrations of BOD, SS, heavy metals, organics, and other contaminants of concern to the Regional Board will also be estimated based on review of historical influent quality data for the plant.

In conjunction with City staff, the major industrial dischargers will be contacted to obtain estimates of future industrial wastewater flows and loadings.

Deliverables: A draft report section including existing influent quality summary and 20-year projections of influent flow and loading to the plant based on the City's population growth projections.

TASK 3. DISCHARGE REQUIREMENTS ANALYSIS AND ASSISTANCE

The City's historic discharge requirements and compliance record will be reviewed, problems with compliance documented, and any facilities at the plant creating compliance problems identified.

The previous studies on receiving waters dilution and dissolved oxygen by Burchett and Litton will be reviewed. Recommendations will be developed for additional modeling of receiving waters to address Regional Board staff concerns regarding existing or potential future surface water discharges by the City. Consultant will work closely with the City's modeling consultant

to develop the proper model scenarios for critical times of year for projected Year 2020 flows and loadings.

Through a review of proposed regulatory actions and meetings with Regional Board staff, the likely future discharge requirements for the wastewater plant will be identified, including possible point(s) of compliance. This will include discharge requirements for effluent discharged to surface waters, effluent discharged to land, land treatment of industrial wastewater, and disposal/reuse of biosolids. Likely receiving waters limitations will also be identified. These requirements will be keyed to the treatment and disposal/reuse options that are developed and analyzed under later tasks.

The Consultant will assist the City in negotiations with the Regional Board regarding discharge requirements. It is assumed that this will consist of four (4) meetings and interim correspondence.

Deliverables: A draft report section discussing current compliance issues, points of compliance, a review of previous models of the receiving waters, recommendations for additional modeling, and a projection of likely future standards for treatment and disposal/reuse alternatives.

TASK 4. DEVELOP EVALUATION CRITERIA

Together with City staff and the Public Advisory Committee, criteria for use in the evaluation of potential alternatives will be developed. Relative weightings for the evaluation criteria will be established. The evaluation criteria may include:

- Cost – planning level capital and O&M costs for each alternative and the equivalent annual cost computed.
- Compliance with discharge standards – the risk of noncompliance with the expected discharge standards will be estimated.
- Reliability – equipment and process performance reliability.
- Flexibility – the ability to meet future conditions that are now undefined and may change over time will be documented for comparison.
- Implementability – the ability of a given alternative to be completed in a timely manner and begin operation will be evaluated in regard to potential political constraints, requirements to negotiate agreements, land purchase, and any other similar factors which could affect its potential for successful completion.
- Environmental impacts – any significant negative impacts or benefits that could result from the implementation of each process alternative.
- Safety – safety of plant staff and the general public.
- Potential open space/recreational benefits – any benefits that could be realized by the public as incidental aspects of project implementation.

When finalized, these criteria will be used in later tasks to guide the development and evaluation of potential project improvements.

Deliverables: Brief report section with criteria to be used in the evaluation of alternatives.

TASK 5. SOILS INVESTIGATION

The purpose of this investigation will be to gather additional data on the hydraulic conductivity of soils near the treatment plant. This data will be used to evaluate the potential for high rate land application of effluent. The following investigations will be performed:

1. On fields owned by the City with potential high conductivity soils:
   - backhoe trenches
   - 20' deep hollow stem auger borings
   - double cylinder infiltration tests
   - bore hole infiltration tests
2. On other fields owned by the City:
   - backhoe trenches
   - double cylinder infiltration tests
3. On potential high conductivity soils not currently owned but accessible:
   - backhoe trenches
   - 20' deep hollow stem auger borings
4. Trenches and hollow stem auger holes will be sampled at regular intervals for soil texture and other physical properties

Deliverables: Boring and trench logs, infiltration test results, and listings of soil properties to be included in the Master Plan Report Appendix.

TASK 6. DEVELOP INDUSTRIAL WASTEWATER TREATMENT AND DISPOSAL/ REUSE ALTERNATIVES

Industrial wastewater facilities will be evaluated for meeting future discharge requirements and for minimizing the potential for odor generation. Alternatives to be developed for minimizing odor potential will include:

- Aeration of influent
- Chemical addition

Alternatives to be developed for improved management or reduction of industrial wastewater constituent loadings will include:

- Fine screening at the source
- Dissolved air flotation at the source

- Improved industrial wastewater field distribution facilities
- Blending of industrial wastewater with treatment plant effluent

The odor reduction potential of these four alternatives will also be evaluated. A preliminary screening of alternatives will be performed to eliminate alternatives which have a low feasibility or appear to be excessively expensive.

Deliverables: Listing and discussion of industrial wastewater alternatives, to be included with a draft report section on land treatment and disposal/reuse alternatives.

TASK 7. DEVELOP BIOSOLIDS DISPOSAL/REUSE ALTERNATIVES

Alternatives will be developed and initially screened for the disposal/reuse of biosolids from the wastewater treatment process. The alternatives will include:

- Blending with effluent for irrigation
- Composting with municipal leaves or other readily available green waste
- On-site soil amendment
- Off-site soil amendment with Class A biosolids

Although the economics will be driven by marketing, green waste collection and transportation costs, and other issues outside of the scope of this study, the potential for composting will be discussed. This discussion will include the quantities of biosolids and green waste available, technical issues, and experiences of relevant nearby municipal composting operations.

A preliminary screening of alternatives will be performed to eliminate alternatives which have a low feasibility or appear to be excessively expensive.

Deliverables: Listing and discussion of biosolids alternatives, to be included with a draft report section on land treatment and disposal/reuse alternatives.

TASK 8. DEVELOP LAND TREATMENT AND DISPOSAL/REUSE ALTERNATIVES

Operational criteria will be established for land treatment and disposal/reuse alternatives. This may include:

- Potential sports complex operational issues
- Irrigation reuse/disposal operations – farming operational constraints, water distribution constraints

Based on the flow projections developed in Task 2, the anticipated discharge requirements from Task 3, and the soils information from Task 5, the disposal/reuse capacity of the existing irrigation fields will be estimated. Alternatives will be developed for the following scenarios at projected flows and loadings for Year 2020:

1. No surface discharge of effluent in summer (June through August)

2. No surface discharge of effluent during June through October
3. No surface discharge of effluent during any months

Alternatives to be developed for increasing effluent disposal/reuse capacity will include:

- Crops with higher seasonal water use rates (trees, alfalfa, grasses, pasture, *etc.*)
- Irrigation at rates above agronomic use rates
- Fallow field irrigation/infiltration basins
- Additional land (private land or State property along I-5)
- Increased storage
- Construction of a sports complex with turf grass
- Construction of an outfall pipeline to White Slough

A preliminary screening of alternatives will be performed to eliminate alternatives which have a low feasibility or appear to be excessively expensive.

Water balances will be prepared for each scenario and for the reasonably plausible alternatives for increasing disposal/reuse capacity. Industrial wastewater flows will be considered in the water balances. Associated issues such as groundwater level control and additional treatment requirements will be identified and discussed for each alternative.

Wetlands alternatives will be developed for combined polishing treatment, effluent disposal/ reuse, and storage. The two wetlands alternatives to be developed will be the use of the existing DWR wetlands and the construction of new wetlands north or east of the City's current irrigation area.

Deliverables: Draft report section on: soils; industrial wastewater alternatives; biosolids disposal/reuse alternatives; effluent disposal/reuse alternatives; water balances for Year 2020 flows for Scenarios 1, 2, and 3; a description of wetlands treatment; and storage alternatives.

TASK 9. DEVELOP TREATMENT PLANT UPGRADE AND EXPANSION ALTERNATIVES

Treatment plant operational criteria will be developed such as:

- Operational philosophy – staffing level and plant operational mode
- Staff and public safety criteria
- Reliability – redundancy (backup) of plant equipment, process selection to ensure compliance with discharge standards, redundancy of power supply feeds, and emergency power
- Power generation plant operational issues

Process unit treatment effectiveness will be determined by reviewing historical operational records, compliance reporting, and past studies and reports, and will be compared with industry performance standards. Using preliminary process models where applicable, reliable capacities

of existing treatment processes will be estimated for current and anticipated waste discharge requirements.

Together with plant staff, a listing of existing major plant deficiencies will be developed. Based on these analyses, capacities and operational deficiencies of plant process units will be listed. Using the projected flows and loadings and anticipated discharge standards, alternatives will be developed for addressing deficiencies and increasing capacity. These alternatives will be described, major equipment identified, and a general location provided.

Wastewater treatment upgrade alternatives will developed for:

- Influent pump capacity expansion
- Grit removal and screening improvements
- Primary treatment expansion
- Odor control
- Activated sludge with complete nitrification
- Activated sludge with complete nitrification and partial denitrification
- Disinfection - gas, liquid, on-site generation of liquid, UV
- Septage receiving facilities
- Re-aeration of effluent
- Filtration or other facilities required for Title 22 reclamation requirements

Biosolids treatment upgrade alternatives to be developed will include:

- Waste solids co-thickening
- Drying lagoons
- Mechanical dewatering
- Thermophilic digestion using extra digester gas and/or waste steam as a heat source

A preliminary screening of alternatives will be performed to eliminate alternatives which have a low feasibility or appear to be excessively expensive.

Other general facilities improvements which are desirable because of safety, operational, or reliability considerations will also be identified. This will include a review of the existing buildings at the plant and their existing and planned uses.

Deliverables: A draft report section with operational criteria, a listing of existing major plant deficiencies, and discussion of treatment plant upgrade alternatives.

TASK 10. EVALUATE ALTERNATIVES

Preliminary cost estimates will be prepared for the alternatives identified in the above tasks. Alternatives will be then be screened on the basis of criteria and weightings developed jointly

with the City staff in Task 4. It is anticipated that two or three best apparent alternatives will be selected for each treatment or disposal/reuse process in the first screening under this task.

The remaining alternatives will be combined with related process and disposal/reuse alternatives into treatment train alternatives to comply with the potential discharge standards and other process and operational criteria defined in previous tasks. Combined treatment train alternatives will be evaluated on the basis of the criteria and weightings developed in Task 5.

Best apparent treatment and disposal/reuse trains will be selected for each reasonably foreseeable set of potential discharge requirements.

Deliverables: A draft report section documenting the alternatives evaluated, costs and subjective criteria rankings, and the selected treatment and disposal/reuse trains for meeting future discharge requirements and capacity needs.

TASK 11. RECOMMENDATIONS

Initial Actions

Recommendations for actions which should be undertaken during the five years after the completion of the master plan will be listed. Cost estimates will be prepared for recommended initial actions.

Long-Term Upgrade Strategy

A decision tree will be prepared for use as a long-term strategy for the City. It will show recommended treatment and disposal/reuse trains, allowing for future changes in regulatory requirements and/or land uses. The decision tree will provide recommendations for actions in response to each reasonably foreseeable future scenario. Figures with facilities layouts will be prepared for each of the major milestones on the decision tree.

Land Treatment Facilities Management Strategy

Based on the water balances performed in Task 8 and the selected treatment and disposal/reuse trains, a land treatment facilities management strategy will be prepared. This will discuss the seasonal timing for each of the major land treatment and disposal/reuse operations and other management strategies to maximize the effectiveness of the facilities.

Deliverables: A draft report section presenting the short-term recommended actions, long-term upgrade strategy, and land treatment management strategy.

TASK 12. REVIEW PRELIMINARY RESULTS WITH STAFF AND PUBLIC ADVISORY COMMITTEE

Preliminary results will be reviewed with the Public Advisory Committee at the completion of Tasks 9, 10, and 11. Prior to submittal of draft report sections, a glossary of technical terms will be prepared for the Public Advisory Committee to enhance understanding of the draft report sections.

After completion of Task 11, a draft master plan report will be developed, integrating all of the above work, and submitted to the City and Public Advisory Committee for review and comment. A meeting will be held to discuss comments and issues. These comments will be incorporated into a final master plan report.

It is anticipated that between Task 4 and this task, a total of 5 meetings will be held with the Public Advisory Committee.

TASK 13. PRESENT RESULTS TO CITY COUNCIL AND PUBLIC

Following the review and incorporation of comments in Task 12, a computerized slide presentation of the master plan study results and final report will made to the City Council at a public meeting.

TASK 14. PROJECT MANAGEMENT/QUALITY ASSURANCE

This task provides for the overall management of the facilities planning effort and includes the following subtasks:

- Assignment and supervision of consultant team staff; project coordination; planning and monitoring of work products, budget, and schedule; correspondence with the City or others; and preparation of regular invoices to the City.
- Meetings with City engineering and operational staffs to solicit input regarding concerns or ideas on treatment and disposal/reuse processes and plant improvements. Two meetings are anticipated for this purpose.
- A meeting with City engineering and operational staff to review the screening of process alternatives and the establishment of treatment and disposal/reuse train alternatives.
- Preparation of a project management plan, a copy of which will be provided to the City, to clearly define assigned project responsibilities by team members (both City and consultant team), effective lines of communication, a systematic progress reporting procedure that provides a mechanism to quickly address items requiring City staff action, and City needs for communication with the public and/or council members. The project management plan will also include an outline schedule with major tasks, milestones, and anticipated meetings with the Public Advisory Committee.
- Peer review of all documents prepared by the project team to provide quality control and assurance.
- Informal meetings between City staff and consultant team members.

CITY OF LODI

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November 12, 1998

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SUBJECT: Authorize City Manager to Execute Professional Services Agreement for Wastewater Treatment Master Plan

Enclosed is a copy of background information on an item on the City Council agenda of Wednesday, November 18, 1998. The meeting will be held at 7 p.m. in the City Council Chamber, Carnegie Forum, 305 West Pine Street.

This item is on the consent calendar and is usually not discussed unless a Council Member requests discussion. The public is given an opportunity to address items on the consent calendar at the appropriate time.

If you wish to write to the City Council, please address your letter to City Council, City of Lodi, P. O. Box 3006, Lodi, California, 95241-1910. Be sure to allow time for the mail. Or, you may hand-deliver the letter to City Hall, 221 West Pine Street.

If you wish to address the Council at the Council Meeting, be sure to fill out a speaker's card (available at the Carnegie Forum immediately prior to the start of the meeting) and give it to the City Clerk. If you have any questions about communicating with the Council, please contact Alice Reimche, City Clerk, at (209) 333-6702.

If you have any questions about the item itself, please call me at (209) 333-6759.

Richard C. Prima, Jr.
Public Works Director

RCP/lm

Enclosure

cc: City Clerk

NCMSTRPLNAGREE.DOC